

ЛД-16 ИИ

**Federal State Budgetary Educational Institution of Higher Education
«North-Ossetia State Medical Academy»
of the Ministry of Healthcare of the Russian Federation**

Department of biological chemistry

APPROVED

by the protocol of the meeting of the Central
coordinating educational and methodological
council on March 22, 2022. № 4

FUND OF ASSESSMENT TOOLS

by discipline **"Methods of modern express diagnostics"**

**the main professional educational program of higher education - specialty program in the
specialty 31.05.01 General Medicine, approved on March 30, 2022**

for 6th year students

by specialty 31.05.01 General Medicine

considered and approved at the meeting of the department
from "14" March 2022 year (protocol № 8)

Head of department

Associate professor

 A. E. Gurina

Vladikavkaz 2022

The structure of the fund of assessment tools

1. Title page
2. Structure
3. Review
4. Passport of assessment tools
5. Kit of assessment tools:
 - questions to the modules;
 - bank of situational problems;
 - standards of test items (with a title page and a table of contents);
 - a test questions

**ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ
УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ «СЕВЕРО-ОСЕТИНСКАЯ
ГОСУДАРСТВЕННАЯ МЕДИЦИНСКАЯ АКАДЕМИЯ» МИНИСТЕРСТВА
ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ**

РЕЦЕНЗИЯ

на фонд оценочных средств

по дисциплине **«Методы современной экспресс - диагностики»**
для обучающихся по специальности **31.05.01 «Лечебное дело»**

Фонд оценочных средств составлен на кафедре биологической химии на основании рабочей программы **«Методы современной экспресс - диагностики»** (год утверждения -2022г.) учебной дисциплины и соответствует требованиям ФГОС 3⁺ ВО по специальности 31.05.01 «Лечебное дело».

Фонд оценочных средств включает в себя:

- вопросы к модулю,
- банк ситуационных задач,
- эталоны тестовых заданий (с титульным листом и оглавлением),
- билеты к зачету.

Банк тестовых заданий включает в себя следующие элементы: тестовые задания, варианты тестовых заданий, шаблоны ответов. Все задания соответствуют рабочей программе **«Методы современной экспресс - диагностики»** и охватывают все её разделы. Сложность заданий варьируется. Количество заданий по каждому разделу дисциплины достаточно для проведения контроля знаний и исключает многократное повторение одного и того же вопроса в различных вариантах. Банк содержит ответы ко всем тестовым заданиям и задачам.

Количество экзаменационных билетов составляет достаточно для проведения экзамена и исключает неоднократное использование одного и того же билета во время экзамена в одной академической группе в один день. Экзаменационные билеты выполнены на бланках единого образца по стандартной форме, на бумаге одного цвета и качества. Экзаменационный билет включает в себя 3 вопроса. Формулировки вопросов совпадают с формулировками перечня вопросов, выносимых на экзамен. Содержание вопросов одного билета относится к различным разделам программы, позволяющее более полно охватить материал учебной дисциплины.

Дополнительно к теоретическим вопросам предлагается банк ситуационных задач. Ситуационные задачи дают возможность объективно оценить уровень усвоения студентом теоретического материала при текущем, промежуточном, итоговом контроле. Сложность вопросов в экзаменационных билетах распределена равномерно.

Замечаний к рецензируемому фонду оценочных средств нет.

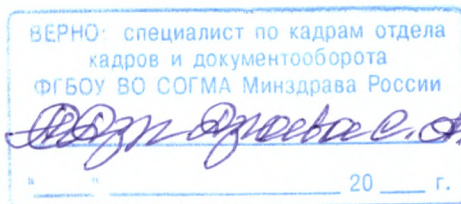
В целом, фонд оценочных средств по **«Методы современной экспресс - диагностики»** способствует качественной оценке уровня владения обучающимися общекультурными и профессиональными компетенциями.

Рецензируемый фонд оценочных средств по специальности **«Методы современной экспресс - диагностики»** может быть рекомендован к использованию для текущей и промежуточной аттестации на лечебном факультете у студентов 6 курса.

Рецензент:

Председатель ЦУМК по естественнонаучным
и математическим дисциплинам, доцент

 Н.И. Боцьева



**Passport of the assessment tools for the discipline
"Methods of modern express diagnostics"**

№п/п	Name of the controlled section (topic) of the discipline / module	Code of formed competence	Name of evaluation tool
1	2	3	4
type of control	Current /intermediate		
1.	Entrance control of the level of training		Test control.
2.	Organization of laboratory services. Quality control (QC) of laboratory research.	GPC-3 GPC-6 PC-17	Test control. Situational task interview. Tickets for offset.
3.	Hematological examinations. Express methods in hematology.	GPC-9 PC-2 PC-3 PC-5 PC-22	Test control. Situational task interview. Tickets for offset.
4.	General clinical research methods Laboratory diagnostics of parasitic diseases.	GPC-9 PC-2 PC-3 PC-5 PC-22	Test control. Situational task interview. Tickets for offset.
5.	Clinical biochemistry.	GPC-9	Test control. Situational task interview. Tickets for offset.

	Methods of modern express diagnostics.	PC-2 PC-3 PC-5 PC-22	
6.	Coagulology Methods of modern express diagnostics.	GPC-9 PC-2 PC-3 PC-5 PC-22	Test control. Situational task interview. Tickets for offset.
7.	Immunological studies. ELISA research in the CDL. Methods of modern express diagnostics	GPC-9 PC-2 PC-3 PC-5 PC-22	Test control. Situational task interview. Tickets for offset.
8.	Cytological studies. Bacteriological research Molecular genetic research.	GPC-9 PC-2 PC-3 PC-5 PC-22	Test control. Situational task interview. Tickets for offset.

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Questions to the module
"Methods of modern express diagnostics"

the main professional educational program of higher education - specialty program in the
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for _____ 6th year students _____
by specialty _____ 31.05.01 General Medicine _____

Developers:

Head of the department _____  A.E. Gurina
Associate professor of the department _____  A.B. Plieva
Assistant of the department _____  Z.A. Khetagurova

Reviewers:

Bolieva L.Z., head of the department, of Pharmacology with Clinical
pharmacology FSBEI HE NOSMA MOH Russia, doctor of medical sciences, professor.
Ovsyannikova A.I., head of the clinical diagnostic laboratory of LLC "Clinical diagnostic laboratory
Dzagurov G.K., candidate of medical sciences

Vladikavkaz 2022

Questions to the module

Module on the topic: Introduction to Clinical Laboratory Diagnostics. Clinical studies of biological material.

1. Quality control in the clinical diagnostic laboratory. Internal and external quality control.
2. Equipping CDL. The main and additional equipment of the clinical diagnostic laboratory.
3. The main stages of laboratory research. Characteristics of the preanalytical, analytical and postanalytical stages.
4. Orders regulating the main provisions and tasks of the clinical diagnostic laboratory.
5. List the main orders of the sanitary and epidemiological regime, on the basis of which instructions were drawn up for the prevention of HIV infection and hepatitis.
6. The principle of internal quality control. How do you understand the control of correctness and reproducibility and what is needed to carry it out?
7. Principle of quality control without using control blood.
8. Why is it necessary to build a control chart during quality control?
9. What reflects the convergence of measurement in quality control?
10. Morphology and function of cells of the myeloid lineage.
11. Morphological and functional characteristics of erythron.
12. Complete blood count. The value of erythrocyte indices.
13. The clinical significance of the hemogram.
14. Leukemoid reactions of the blood (types and differences from leukemia).
15. Laboratory signs of iron deficiency anemia.
16. Hemolytic anemias.
17. Clinical significance of the myelogram.
18. Lekocytosis and leukopenia. Clinical significance.
19. Morphology and functions of cells of the megakaryocytic lineage.
20. Anemia. Classification by erythrocyte indices.
21. Hemogram. Importance of microscopic examination of a peripheral blood smear.
22. Microscopy of urine sediment. The clinical significance of this study.
23. Study of urine according to Nechiporenko. Counting shaped elements.
24. Laboratory tests for damage to the nephron.
25. Laboratory diagnostics of dysmetabolic nephropathies.

Module on the topic: Laboratory methods for the study of effusion, sputum, cerebrospinal fluid, duodenal and intestinal contents. Laboratory diagnostics of parasitic diseases and diseases of the genital area.

1. Differential diagnostics of effusion liquids carried out in the laboratory.
2. Microscopic examination of effusion fluids and clinical and diagnostic value of this study.
3. What research is carried out in the laboratory if meningococcal infection is suspected?
4. What are the rules for preparing blood products for suspected malaria plasmodium?
5. Express diagnostics in the laboratory for suspected sexually transmitted diseases?
6. General clinical examination of sputum. What kind of sputum examination is carried out in case of suspected tuberculosis?

Module on the topic: Laboratory research methods (acid-base balance, hemostasis, immunological research Methods of laboratory research (enzyme-linked immunosorbent assay, cytological research, bacteriological research, molecular genetic research).

1. Differential diagnosis of bilirubinemia.
2. Lipid metabolism. Indicators of lipid metabolism, which are the most important in the development of atherosclerosis.
3. Protein metabolism. The clinical significance of the determination of urea and creatinine.

4. Research of indicators of carbohydrate metabolism. Determination of glucose in clinical practice.
5. Markers of myocardial damage, express diagnostics and their clinical significance.
6. Differential diagnosis of an increase in aminotransferases.
7. Clinical and diagnostic value of an increase in the activity of alkaline phosphatase?
8. Clinical and diagnostic value of an increase in LDH activity.
9. Transport of iron in the body. Clinical and diagnostic value of excess and lack of iron in the body.
10. Clinical and diagnostic value of uric acid metabolism disorders.
11. Protein metabolism. Hyperproteinemia and hypoproteinemia.
12. Clinical significance of albumin determination.
13. Clinical significance of the definition of globulins.
14. Buffer systems of blood.
15. Clinical significance of the determination of electrolytes.
16. Metabolic acidosis and its clinical significance.
17. Metabolic alkalosis and its clinical significance.
18. Respiratory acidosis and its clinical significance.
19. Respiratory alkalosis and its clinical significance.
20. Acquired platelet disorders (thrombocytopenia).
21. Plasma proteins of hemostasis.
22. Fibrinolysis as the main endogenous mechanism that prevents thrombus formation.
23. Elements and functions of the components of primary hemostasis.
24. Tests carried out in the CDL to assess the vascular and platelet components.
25. Tests carried out in the CDL to assess plasma hemostasis.
26. Secondary complex disorders of hemostasis.
27. DIC - syndrome. Express - diagnosis of DIC syndrome.
28. Diagnosis of antiphospholipid syndrome.
29. What method is used in the laboratory to determine the blood group?
30. What reaction is the basis for determining the blood group?
31. Latex - agglutination method used to diagnose rheumatic conditions.
32. ELISA diagnosis of hormones of the genital area and their clinical significance.
33. List the functions of the central organs of the immune system.
34. Immunological studies and their importance in clinical practice.
35. Plasma cells and their role in the immune response.
36. What method is used to determine the population of B-lymphocytes in the blood?
37. What can be determined when studying the subpopulation composition of lymphocytes?
38. ELISA diagnosis of viral hepatitis.
39. ELISA diagnosis of thyroid hormones.
40. ELISA diagnosis of hormones of the genital tract.
41. Methods of polymerase chain reaction in clinical practice.
42. Screening for mutations by PCR.
43. Cellular immunity. The role of lymphocytes in the immune response.
44. Humoral immunity. Determination of immunoglobulins and their clinical significance.

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Situational task № 1

The morphological evaluation of peripheral blood erythrocytes revealed the following changes: hyperchromia, macrocytosis, neutrophil hypersegmentation, and a decrease in platelet count. What kind of anemia are these changes characteristic of?

Head department, Assoc.

A.E. Gurina

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Situational task № 2

Morphological assessment of peripheral blood erythrocytes revealed the following changes: hypochromia, microcytosis, poikilocytosis. What kind of anemia are these changes characteristic of?

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Situational task № 3

Morphological assessment of peripheral blood erythrocytes revealed the following changes: anisochromia, normochromia. What kind of anemia is characterized by these changes, and in what diseases does it occur.

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Situational task № 4

Morphological assessment of peripheral blood erythrocytes revealed the following changes: normochromia, anisocytosis (mixed). What kind of anemia are these changes characteristic of?

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Situational task № 5

When conducting the OAC on a hematological analyzer, an increase in the value of MCHC up to 450 g/l was revealed. What does an increase in the erythrocyte index indicate? What actions need to be taken to continue working on the hematology analyzer?

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Situational task № 6

When conducting OAC on a hematological analyzer, an increase in the number of leukocytes and % of granulocytes was revealed. What examination is necessary to clarify the diagnosis? What change in the leukocyte formula is possible in this situation?

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Situational task № 7

When calculating the leukoformula, an increase in the number of leukocytes up to $20 \times 10^{12} / l$, an increase in the value of lymphocytes up to 80% was revealed. What disease of hematopoietic tissue can occur with this leukogram?

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Situational task № 8

In the peripheral blood, the number of erythrocytes is reduced, hemoglobin is 80 g/l, the number of platelets is reduced, the number of leukocytes is increased, and up to 28% of blast cells are detected. What conclusion can be drawn, given the UAC?

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Situational task № 9

A biochemical blood test revealed an increase in total cholesterol and LDL. What risk is the patient exposed to with such a ratio of analytes in the lipid profile?

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Situational task № 10

When conducting a biochemical blood test, an increase in glucose levels (7.8 mmol/l) was detected. What research should be done in a patient to establish hyperglycemia?

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Situational task № 11

In the biochemical analysis of the patient's blood, the content of total protein was increased to 96 g/l. What investigations should be done on the patient? What preliminary diagnosis can be assumed?

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Situational task № 12

Upon admission to the clinic, the patient complained of the appearance of multiple petechiae on the skin, bleeding from the gums. From the anamnesis of the disease, it was found that these changes appeared after the infection. What preliminary diagnosis can be made to the patient and what laboratory tests should be performed?

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Situational task № 13

In the surgical department, after the operation, the next day, the patient began to develop shortness of breath, pain behind the sternum appeared. What tests should be done in the laboratory and what diagnosis can be made in this situation?

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Situational task № 14

In a patient who is being treated in the cardiology department, the INR values are greater than 4. What actions should be taken to prevent the risk of bleeding?

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Situational task № 15

What state of the coagulation system is possible in a patient whose prothrombin index is increased in blood tests, the prothrombin ratio and INR are reduced, RFMK, D-dimers are increased. What actions need to be taken?

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Situational task № 16

A young man was admitted to the clinic with complaints of dizziness, headache, acute pain in the lower back and abdomen. When conducting laboratory studies, the following data were obtained: KLA-leukopenia, normochromic anemia and high reticulocytosis, dark brown urine, increased indirect bilirubin, increased lactate dehydrogenase. What disease can we talk about, and what tests need to be done additionally?

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Situational task № 17

The patient was admitted to the clinic with severe signs of intoxication, skin itching, nausea, vomiting, increased blood pressure, swelling, bleeding gums. In the anamnesis of the phenomenon of chronic renal failure. What laboratory tests should be performed on the patient, and what preliminary diagnosis can be made on the basis of the data presented?

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Situational task № 18

One month after the blood transfusion, the patient began to have fever attacks, recurring every fourth day. In a thick drop of blood, small, rounded, compact, pigment-containing trophozoites were found. There are no shadows of erythrocytes. A species of Plasmodium has been discovered.

1. P. vivax;
2. P. falciparum;
3. P.malariae;
4. P.ovale;
5. Any of the above.

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Situational task № 19

The patient was admitted to the clinic with complaints of high temperature, sore throat. On examination, marked enlargement of the lymph nodes in the neck, enlargement of the liver and spleen. In the general analysis of blood, leukocytosis, shift to the right, the presence of up to 10% of mononuclear cells. What disease can we talk about and what additional studies should be performed on the patient?

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Situational task № 20

Nematode eggs were found in the feces, the shape of the eggs is oval, there are also spherical ones. Some of them have a scalloped shell, dark yellow or brown, opaque. In others, the shell is smooth, two-circuit, transparent and colorless. Inside the egg, a blastomere is visible, between the edges of which and the poles of the nucleus, free space is visible. Nematode eggs found:

1. Hookworm;
2. Vlasoglava;
3. Pinworms;
4. Ascaris;
5. Any of the above.

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Situational task №21

In a patient with severe hypochromic anemia, oval-shaped helminth eggs were found in the feces, the shell is transparent with bluntly rounded ends, contains 4 blastomeres. You can think about:

1. Enterobiasis;
2. Ascariasis;
3. Trichuriasis;
4. Ankilostomidosis;
5. Any of the listed diseases.

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Situational task № 22

During the clinical examination in an elderly patient in the CBC, normochromic anemia, an increase in the number of leukocytes up to 30×10^9 , a shift to the left to myelocytes were revealed. On examination, he did not complain. What disease can we talk about and what kind of research should be done for the patient?

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Situational task № 23

The patient went to the doctor with complaints about the constant discharge of segments that crawl out of the intestine in several pieces at any time of the day or night, regardless of the act of defecation. You can think about:

1. Diphyllbothriasis;
2. Tenioze;
3. Hymenolepidosis;
4. Teniarinhoze;
5. All of the above is true.

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Situational task № 24

In a child's feces, rounded, colorless, transparent eggs with a double-circuit shell were found. Winding filaments are visible between the outer and inner shells. There are 3 pairs of hooks in the center. The eggs found are:

- Roundworm;
- Vlasoglav;
- Bull tapeworm;
- Dwarf tapeworm;

-
- All of the above are correct.

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Federal State Budgetary Educational Institution of Higher Education

«North-Ossetia State Medical Academy»

of the Ministry of Healthcare of the Russian Federation

Department of Biological Chemistry

Faculty of General Medicine Course 6

Discipline "Methods of modern express diagnostics"

Situational task № 25

The patient complained of pain in the lumbar region, weakness, malaise. When conducting laboratory tests, it was revealed: normochromic anemia of moderate severity, an increase in total protein in a biochemical blood test, proteinuria without microscopy. What additional tests need to be done and what disease can we talk about?

Head department, Assoc.

A.E. Gurina

Date of approval at the CCEMC

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ЛД-16 ИИ

**Federal State Budgetary Educational Institution of Higher Education
«North-Ossetia State Medical Academy»
of the Ministry of Healthcare of the Russian Federation**

Department of biological chemistry

APPROVED
by the protocol of the meeting of the Central
coordinating educational and methodological
council on March 22, 2022. № 4

**Standards of test items
in the discipline "Methods of modern express diagnostics"**

**the main professional educational program of higher education - specialty program in the
specialty 31.05.01 General Medicine, approved on March 30, 2022**

for _____ 6th year students _____
by specialty _____ 31.05.01 General Medicine _____

considered and approved at the meeting of the department
from "14" March 2022 year (protocol № 8)

Head of department

Associate professor

 A. E. Gurina

Vladikavkaz 2022

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View control	Current /Intermediate control			
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2.	Organization of laboratory services. Quality control (QC) of laboratory research.	25	GPC-3 GPC-6 PC-17	From 30 to 34
3.	Hematological examinations. Express methods in hematology.	25	GPC-9 PC-2 PC-3 PC-5 PC-22	from 34 to 39
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7.	Immunological studies. ELISA research in the CDL. Methods of modern express diagnostics	35	GPC-9 PC-2 PC-3 PC-5 PC-22	from 57 to 62
8.	Cytological studies. Bacteriological research Molecular genetic research.	30	GPC-9 PC-2 PC-3 PC-5 PC-22	from 62 to 65

Entrance control of the level of training

1. *C-reactive protein:*

- A. is present in the norm, but decreases with inflammation
- B. the greatest increase is observed in bacterial inflammation
- C. the greatest increase is observed in viral inflammation
- D. appears in chronic inflammation
- E. disappears with complications in the postoperative period (wound abscess, thrombophlebitis, pneumonia)

2. *The specific test for hepatitis B is:*

- A. determination of transaminase activity
- B. determination of acid phosphatase activity
- C. determination of sorbitol dehydrogenase activity
- D. Immunochemical detection of HBS antigen
- E. increase in bilirubin

3. *Hormones of the hypothalamus have a direct effect on:*

- A. thyroid gland
- B. pancreas
- C. pituitary
- D. adrenal glands
- E. gonads

4. *Hormones can be:*

- A. glycoproteins
- B. proteins
- C. steroids
- D. peptides
- E. That's right

5. *The pH of human arterial blood is normally:*

- A. 0.0 -1.0 units
- B. 6.70-7.7 units
- C. 7.00-7.35 units
- D. 7.35-7.45 units
- E. 7.0-10.0 units

6. *Clinical signs of hyperkalemia are expressed:*

- A. Paresthesia of the limbs
- B. paralysis
- C. myocardial dysfunction (ECG changes)
- D. disorders of the digestive tract

7. *The deposited form of carbohydrates is:*

- A. glucose-6-phosphate
- B. glycogen
- C. oligosaccharides
- D. glucose-1-phosphate
- E. pyruvate

8. *The main organ involved in blood glucose homeostasis is:*

- A. intestines
- B. skeletal muscles
- C. liver
- D. lungs
- E. kidneys

9. *Absorption of carbohydrates occurs mainly in:*

- A. oral cavity
- B. stomach
- C. small intestine
- D. large intestine

10. Fibrinogen decreases in the blood when:

- A. myocardial infarction
- B. cirrhosis of the liver
- C. rheumatism
- D. uremia
- E. acute inflammation

11. In blood serum, unlike plasma, there is no:

- A. fibrinogen
- B. albumin
- C. complement
- D. kallikrein
- E. antithrombin

12. The typical course of chronic lymphocytic leukemia is characterized by:

- A. leukopenia with lymphopenia
- B. leukopenia with slight lymphocytosis
- C. leukocytosis with neutrophilia
- D. leukocytosis with significant lymphocytosis (up to 80% and above)
- E. normal white blood cell count with slight lymphocytosis

13. Hemoglobin is:

- A. protein
- B. carbohydrate
- C. chromoprotein
- D. lipid
- E. mineral substance

14. Hemoglobin performs the function:

- A. Metabolite transport
- B. plastic
- C. transport of oxygen and carbon dioxide
- D. energy
- E. Trace element transport

15. Poikilocytosis is a change in:

- A. erythrocyte shapes
- B. RBC size
- C. color intensity of erythrocytes
- D. RBC volume
- E. All listed options

16. For acute inflammatory processes in the leukocyte formula is characteristic:

- A. basophilia
- B. leukopenia with shift to the right
- C. eosinophilia
- D. neutrophilia with a shift to the left

17. The term anisocytosis means a change in:

- A. erythrocyte shapes
- B. erythrocyte sizes
- C. color intensity of erythrocytes
- D. RBC count
- E. appearance of nucleated erythrocytes in peripheral blood

18. The relative density of the cerebrospinal fluid is reduced when:

- A. inflammation of the meninges
- B. brain injury
- C. hydrocephalus

19. To detect meningococcus, smears are prepared from the sediment and stained:

- A. according to Gram
- B. according to Ziehl-Nielsen
- C. According to Romanovsky
- D. according to Leishman

20. Physiological cylindruria occurs after:

- A. light breakfast
- B. sleep
- C. swimming in cold water
- D. sports training, physical activity

21. Urinary retention (anuria) can be caused by:

- A. diabetes mellitus
- B. chronic pyelonephritis
- C. urolithiasis
- D. prostate tumor
- E. acute renal failure

22. According to Nechiporenko, they investigate:

- A. first urine
- B. last urine
- C. morning mid-stream urine

23. An increase in ketone bodies in the urine is observed with:

- A. prolonged fasting

- B. severe diabetes mellitus
- C. pyelonephritis
- D. cystitis

24. *Hydrochloric acid has the following actions in the stomach:*

- A. contributes to the swelling of food proteins
- B. macerates the cell membrane of digestible plant fiber
- C. has a bactericidal effect
- D. activates the conversion of pepsinogen to pepsin
- E. That's right

25. *If COVID-19 is suspected, a general laboratory examination includes:*

- A. CBC
- B. ALT, AST, LDH, GGT
- C. CRP
- D. immunogram

Current test control on topic No. 1 "Fundamentals of the organization of health care and laboratory services."

Option number 1

1. The following non-laboratory factors may affect the analysis results:

- A) Physical and emotional stress of the patient
- B) Circadian rhythms, climate influence
- C) Body position
- D) Taking medications
- E) All of the above

2. The accompanying form for the material entering the laboratory must indicate the following, in addition to:

- A) Full name of the patient (No. of medical history)
- B) Type of research
- C) Presumptive diagnosis
- D) *Last name of the attending physician*
- E) Research method

3. The main tasks of the clinical diagnostic laboratory are:

- A) Providing clinical laboratory research in accordance with the profile of the healthcare facility
- B) Introduction of progressive forms of work, new methods
- C) Providing advice to doctors of medical departments in the interpretation of laboratory data

- D) Advanced training of laboratory personnel
- E) Carrying out measures for labor protection of personnel, compliance with safety measures
- F) All of the above is true

4. External quality control is

- A) Metrological control
- B) Control of the use of research methods by different laboratories
- C) The system of measures designed to evaluate the method
- D) The system of objective verification of the results of laboratory studies of different laboratories
- E) All of the above is true

5. Internal laboratory quality control is

- A) Identification and elimination of unacceptable analytical errors.
- B) Assessment of the convergence of measurement results.
- C) Evaluation of the reproducibility and accuracy of measurement results, control charts.
- D) Conducting operational quality control of laboratory research results in each analytical series.
- E) All of the above is true

Option number 2

1) THE FOLLOWING OUTLABORATORY FACTORS MAY AFFECT THE ANALYSIS RESULTS:

- A. Physical and emotional stress of the patient
- B. Circadian rhythms, climate influence
- B. Body position
- D. Taking medications
- E. All of the above

2) ACTION TAKEN WHEN THE METHOD LEAVES UNDER CONTROL:

- A. View laboratory log
- B. Purchase new control materials and calibrators
- B. Delay the execution of analyzes, find the cause of incorrect results
- D. Mark all errors related to the error on the control chart.
- E. All of the above

3.) TO DETERMINE WHICH ANALYSIS IS NOT A MANDATORY REQUIREMENT OF A 12-HOUR ABSTRACT FROM A FOOD:

- A. Triglycerides, cholesterol

- B. Complete blood count
- C. Total protein
- D. Serum enzymes (alkaline phosphatase, a-amylase)
- E. Glucose

4.) THE FOLLOWING TYPES OF CONTROL CHART ARE USED FOR IN-LABOR QUALITY CONTROL:

- A. Shewhart Map
- B. By daily averages
- C. Cumulative amounts
- D. By duplicates
- E. All of the above

5.) ERRORS IN THE DETERMINATION OF ESR MAY BE SERVED BY:

- A. Incorrect ratio between sodium citrate and blood
- B. Clot formation
- C. Oblique position of the capillary
- D. Failure to comply with the temperature regime
- E. All of the above

Option number 3

1.) THE ACCOMPANYING FORM TO THE MATERIAL SUBMITTED TO THE LABORATORY SHOULD STATE THE FOLLOWING, IN ADDITION:

- A. Surname I.O. sick
- B. History of the disease
- C. Type of research
- D. Name of the attending physician
- E. Research method

2.) BASIC EXTERNAL QUALITY CONTROL REQUIREMENT:

- A. Control samples are analyzed separately from the analyzed samples.
- B. Analysis of control samples is carried out by the head of the laboratory
- C. The analysis of control samples is part of the routine of the laboratory.
- D. Carried out by any laboratory assistant
- E. All of the above is true.

3.) THE FOLLOWING INTRA-LABORATORY FACTORS MAY AFFECT THE ANALYSIS RESULTS:

- A. Sample storage conditions
- B. Hemolysis, lipemia
- C. Choice of anticoagulant
- D. Methods used
- E. All of the above

4.) EXTERNAL QUALITY CONTROL IS:

- A. Metrological control
- B. Control of the use of research methods by different laboratories
- C. System of measures designed to evaluate the method
- D. The system of objective verification of the results of laboratory tests of different laboratories
- E. All of the above is not correct

5.) WHEN WORKING IN KDL, IT IS FORBIDDEN TO LEAVE ON TABLES:

- A. Non-fixed smears
- B. Petri dishes, test tubes and other dishes with infectious material
- C. Methyl alcohol
- D. All of the above

OPTION NUMBER 4

Continue with your answer.

1. THE MAIN TASKS OF THE CDL ARE _____

2. KDL CARRIES OUT _____

3. KDL HAS THE RIGHT: _____

4. THE MAIN EQUIPMENT OF THE CDL: _____

5. KDL ACCESSORIES: _____

OPTION NUMBER 5

1. 1. Find the right answer

1. Order No. 380 A. Regulations on the CDL.

2. Order No. 408 B. Sanitary and epidemiological regime in the CDL

3. Order No. 720

Answer: 1-B; 2-A; 3-B; 1-A; 3A.

2. 2. Find the right answer

1. Order No. 380 A. Regulations on the CDL.

2. Order No. 220 B. The quality of laboratory research

3. Order No. 45 B. Internal laboratory quality control

4. Order No. 9 D. External quality control

Answer: 1-B; 2-B; 3-D; 3-B; 1-A; 4-B; 4-D.

3. 3. Find the right answer

1. Xsr A. Arithmetic mean

2. b B. Coefficient of variation

3. σ B. Absolute value

4. SD D. Standard deviation

5. CV

Answer: 1-D; 5-A; 4-D; 3-D; 5 B; 1-A; 2-B; 3-B.

4. 4. Find the right answer

1. Hemoglobin A. Hematology analyzer

2. Lipid spectrum B. Biochemical analyzer

3. Glucose B. Coagulometer

4. ICSU G. Microscope

5. Prothrombin

Answer: 1-A; 4-A; 5-B; 1-A; 3-B; 2-B.

5. Find the right answer

1. Auxiliary equipment KDL A. Analyzers, dispensers, microscope.

2. Basic equipment KDL B. Urometer, distiller, mini-shaker.

Answer: 1-A; 2-B; 1-B; 2-A.

Current test control on topic No. 2 “Clinical studies. Hematology”.

Option number 1

1. Sources of errors in determining ESR can be:

- A. Incorrect ratio between sodium citrate and blood
- B. Clot formation
- C. Capillary oblique position
- D. Failure to comply with the temperature regime
- E. All of the above

2. An increase in the number of reticulocytes occurs when:

- A. Aplastic anemia
- B. B-12 deficiency anemia
- B. Hemolytic syndromes
- D. Cancer metastases in the bone marrow
- E. Anemia in chronic diseases

3. *The values of the average erythrocyte volume (MCV) and color index are increased at:*

- A. Iron deficiency anemia
- B. Anemia in chronic diseases
- B. Megaloblastic anemias
- G. Thalassemias
- D. Hemoglobinopathies

4. *Hemoglobin molecule consists of:*

- A. Protoporphyrin and iron
- B. Porphyrin and iron
- B. Heme and Globin
- G. Globin and iron
- D. Protoporphyrin and globin

5. *Neutropenia is common in all situations except:*

- A. Aplastic anemia
- B. B-12 deficiency anemia
- B. Treatment with cytostatics
- D. Viral infections
- D. Acute inflammation

Option number 2

1.) BY "RELATIVE NEUTROPHILESIS" IS UNDERSTANDED:

- A. Increase in the percentage of neutrophils, but their normal absolute number
- B. Increase in the percentage and absolute content of neutrophils
- B. Increase in the percentage of neutrophils
- D. Increase in their absolute number
- E. Decrease in the percentage of lymphocytes

2.) AN INCREASE IN THE NUMBER OF ERYTHROCYTES IS NOT OBSERVED:

- A. In newborns on the first day
- B. In case of vomiting or burns
- B. In smokers
- D. With fever
- D. With splenomegaly

3.) LOW MCV AND COLOR VALUES ARE CHARACTERISTIC FOR:

- A. Lead intoxication
- B. Iron deficiency anemia
- B. Paroxysmal nocturnal hemoglobinuria
- D. Anemia in chronic diseases
- E. All the listed diseases

4.) ERYTHREMIA IS NOT PROPERLY:

- A. Low ESR
- B. High ESR
- B. Increase in blood viscosity
- D. Neutrophilic leukocytosis
- B erythrocytosis

5.) ANISOCYTOSIS IS A CHANGE:

- A. Forms of erythrocytes
- B. Red blood cell count
- B. Values of erythrocytes
- D. All of the above parameters
- E. Content of hemoglobin in erythrocyte

Option number 3

1.) BLUE CELLS HAVE:

- A. Non-reticular structure of chromatin
- B. Big core
- B. Basophilic cytoplasm
- G. Nucleoly
- E. All of the above

2.) FOR DIFFERENTIAL DIAGNOSIS OF IRON DEFICIENCY ANEMIA AND ANEMIA IN CHRONIC DISEASES, THE DEFINITION IS OF THE GREATEST VALUE:

- A. Serum iron and TIBC
- B. Transferrin
- B. Erythrocyte indices
- G. Ferritina
- D. Reticulocytes

3.) THE CONCEPT OF "MACROPHAGES" RESPONDES THE FOLLOWING CHARACTERISTIC:

- A. Granuleless blood cells, fingernose nucleus, indefinite shape
- B. Granular blood cells capable of invading bacteria
- B. Mononuclear phagocyte capable of capturing and digesting foreign particles and microbes
- D. Blood cells capable of capturing leukocytes
- E. All of the above

4.) WHICH OF THE SIGNS ARE COMMON TO IRON DEFICIENCY ANEMIA AND THALASSEMIA:

- A. Hypochromia and microcytosis of erythrocytes
- B. Presence of erythrokaryocytes (normoblastosis) in the blood
- B. Reticulocytosis above 2%
- D. Hyperbilirubinemia, yellowness of the skin
- D. Basophilic puncture and targetting of erythrocytes

5.) HEMOGRAM IN CHRONIC LYMPHOLEUKOSIS IS CHARACTERIZED BY ALL OF THE LISTED SIGNS, IN EXCEPT:

- A. Absolute lymphocytosis
- B. Relative neutropenia
- B. Neutrophilia

D. Cells of cytolysis

E. Normochromic anemia

OPTION NUMBER 4

Characterize hematopoietic sprouts

1. Erythropoiesis _____

2. Granulocytopoiesis

3. Monocytopoiesis

4. Megakaryocytopoiesis

5. Lymphocytopoiesis

Option number 5

1. Find the right answer

1.The norm of hemoglobin in women A. 130-160 g / l

2.The norm of hemoglobin in men B. 120-140 g / l

3.The norm of leukocytes in adults B. Decreased hemoglobin

4.Erythrocyte indices D. Acute leukemia

5.Anemia D. Tumor of hematopoietic tissue

6.Erythremia E. $4-9 \times 10^9 / l$

7. Blasts J. The appearance of myelocytes, juvenile increase in p / venom. segments

8 Shift left Z. Average content

hemoglobin in the erythrocyte,

the average concentration of hemoglobin in the erythrocyte.

Answer: 1-A; 2-A; 1-B; 3-E; 4-E; 5-D; 7-D; 8-3; 6-D; 7-D; 8-F; 4-W; 5-B.

2. Find the right answer

1.MCV A. Average hemoglobin content in erythrocyte

2.MCH B. Platelet count

3.MCHC B. Average concentration of hemoglobin in erythrocyte

4.RDW G. Average erythrocyte volume

5.PLT D. Indicator of anisocytosis

Answer: 1-D; 5-A; 4-D; 3-A; 5 B; 1-A; 3-B; 3-B; 2-A.

3. Find the right answer

1. Myeloblasts A. These are young cells of the myeloid lineage

2.Normoblasts B. Nucleated erythrocytes

3. Myelokaryocytes B. Bone marrow cells

4. Myelogram D. Counting cells / m

5. Erythrokaryocytes D. Erythroid cells.

Answer: 1-B; 5-A; 2-B; 4-D; 3-A; 4-D; 1-A; 3-B; 2-B; 5-D.

4. Find the right answer

1.Normablast cells in c / m A. 2.1-4.5

2. Rate ISN B. 0.1-1.1

3.The norm of eosinophils in c / m V. 0.5-5.8

4.% of erythrokaryocytes in c / m G. 0.5-0.9

5. Norm L / E D. 7.0-12.2

6.% of myelocytes in c / m E. 14.5-26.5

Answer: 1-A; 2-D; 1-B; 3-B; 4-E; 5-A; 6-E; 4-D; 5-B; 6D.

5. Find the right answer

1. An increase in the number of blasts occurs in - A. Acute leukemia

2.Megaloblastic type of hematopoiesis occurs when: B. Megaloblastic anemias

3. An increase in the number of erythrocytes occurs when: B. Erythremia

4. Reticulocytosis is characteristic: D. Hemolytic anemia.

Answer: 1-A; 2-B; 3-B; 4-D, 3-D, 4-B.

CURRENT TEST CONTROL ON THE TOPIC №3.

"Clinical studies (urine, effusion, cerebrospinal fluid, sputum, gastric contents, duodenal contents, composition of pancreatic and intestinal contents. A brief description of the clinical picture of syphilis, gonorrhea and trichomoniasis)".

Option number 1

1. Determination of the relative density of urine gives an idea of:
 - A. Excretory function of the kidneys
 - B. Concentration function
 - C. Filtration function
 - D. All of the above functions
2. The green color of bile in portion B is due to:
 - A. Inflammation of the gallbladder and oxidation of bilirubin to biliverdin
 - B. Hemolytic jaundice
 - C. Cirrhosis of the liver
 - D. Iron deficiency anemia
3. Normal protein content in cerebrospinal fluid:
 - A. 0.033-0.1 g / l
 - B. Above 0.5g / L
 - C. 0.2-0.3 g / l
 - D. 0.3-0.5 g / l
 - E. Completely missing
4. The amount of protein in the exudate:
 - A. 5 - 10 g / l
 - B. 5 - 25 g / l
 - C. 25 - 30 g / l
 - G. 30 g / l and above
5. Eosinophilia in sputum is characteristic for:
 - A. Bronchial asthma
 - B. Acute bronchitis
 - C. Chronic bronchitis
 - D. Pulmonary tuberculosis

Option number 2

- 1). The gastric juice contains:
 - A. Hydrochloric acid
 - B. Digestive enzymes
 - C. Mucus
 - D. All answers are correct.
 - E. There is no correct answer.
- 2) For bronchial asthma in sputum are characterized by:
 - A. Kurshman Spirals

B. Charcot-Leiden crystals

C. Clusters of eosinophils

D. All answers are correct.

E. There is no correct answer

3.) The reaction of feces is considered normal:

A. Kislava

B. Alkaline

C. Sharply alkaline

D. Neutral

E. There is no correct answer.

4.) Proteinuria can be an indicator of damage:

A. Kidney glomeruli

B. Kidney tubules

C. Urinary tract

D. Organism

E. All of the above

5.) The glucose level in the cerebrospinal fluid decreases:

A. Brain tumors

B. Brain trauma

C. Meningitis

D. All of the above diseases

E. Never changes

Option number 3

1.) IN THE DUODENAL CONTENT MAY BE VEGETATIVE FORMS OF CIGGIUM GENUS:

A. Trichomonas

B. Chylomastics

C. Lamblia

D. All of the above

E. There is no correct answer.

2.) TO ERLICH'S NOTEBOOK FOR TUBERCULOSIS RELATED TO:

A. Cholesterol crystals

B. Calcified detritus

C. Mycobacterium tuberculosis

D. Calcified elastic fibers

E. All listed items

3.) HYDROLIC ACID HAS THE FOLLOWING ACTIONS IN THE STOMACH:

A. Prepares the digestible vegetable fiber for digestion

B. Prepares food proteins for proteolysis (including muscle fibers)

C. Has a bactericidal effect

D. Activates pepsinogen

E. All of the above

4.) POSTHENAL PROTEINURIA IS CAUSED BY:

A. Passing through an intact renal filter for low molecular weight proteins

B. Filtration of normal plasma proteins through a damaged renal filter

C. Impaired proximal tubular protein reabsorption

D. Ingestion of inflammatory exudate in the urine in case of urinary tract disease

E. All of the above factors

5.) THE ELEMENTS OF URINE SEDIMENT ONLY OF RENAL ORIGIN ARE RELATED TO:

A. Red blood cells

B. Leukocytes

C. Cylinders

D. Squamous epithelium

E. All of the above

Option number 4

1. Gonococcal infection does not affect:

A. Urethra

B. Cervix

C. Small intestine

D. Large intestine

E. conjunctiva of the eye

2. The identification of gonococci is based on the following features, except:

A. Parnotikokkov

B. Gram-negativeness

C. Gram positivity

D. Intracellular location

E. Bean-shaped

3. The mucous membranes lined with:

A. Stratified squamous non-keratinizing epithelium

B. Stratified squamous keratinizing epithelium

C. Transitional epithelium

D. Single-layer columnar epithelium

E. Cubic epithelium

4. When examining women for gonorrhea, discharge for bacteriological analysis is taken from all foci, except for:

A. Urethra

B. Paraurethral and Bartholin glands

C. Rectum

D. Posterior vaginal fornix

E. Cervical canal

5. The main causes of vaginal dysbiosis:

A. Violation of hormonal regulation

B. Presence of infectious processes

C. Immunodeficiency states

D. Use of drug therapy (hormones, antibiotics)

E. All answers are correct.

Option number 5

Add definitions:

XANTHOCHROMIA - _____

HYPERPROTEINARCHY - _____

—

HYPOGLYCOARCHY - _____

PLEOCYTOSIS -

The main compounds that form crystals in urine are:

In the organized sediment of urine, cells are distinguished

Transudate is _____

Exudate is _____

Option number 6

1. Find the right answer

- | | |
|--|---------------------------------|
| 1.The norm of leukocytes in the urine of women | A. 1-2-0 in the field of vision |
| 2.The norm of leukocytes in urine in men | B. 0.002 g / l |
| 3.The norm of protein in the urine | C. 2-1-4 in the field of vision |
| 4.The norm of erythrocytes in urine | D. 0-1-0 in pz / sp |

Answer: 1-A; 2-B; 4A; 3-B; 2-A; 1-B; 4G;

2. Find the right answer

- | | |
|----------------|---|
| 1.Urobilinoids | A. Presence of bile pigments in urine |
| 2.Glucosuria | B. The presence of glucose in the urine |
| 3. Proteinuria | C. Increased protein in urine |
| 4. Hematuria | D. Erythrocytes in urine |

Answer: 1-B; 2-B; 4A; 3-B; 1-B; 4-D; 1-A.

3. Find the right answer

- | | |
|---|-------------|
| 1. Color of duodenal contents (portion A) | A. Olive |
| 2. Color of duodenal contents (portion C) | B. 15-45 ml |
| 3. Amount (portion A) | C. Golden |
| 4. Amount (portion B) | D. 20-50 ml |
| 5. Amount (A1 portion) | E. 3-5 ml |

Answer: 1-A; 3-D; 4-B; 2-A; 3-B; 3-D; 5-D; 2-C; 4-D; 1-C; 5 B.

4. Find the right answer

- | | |
|--|------------------|
| 1. Rn sputum normal | A. 5.5-6.5 |
| 2. The nature of sputum is normal | B. 7.5-8.0 |
| 3. The consistency of sputum is normal | C. Liquid |
| 4. The consistency of sputum with bronchitis | D. Viscous |
| 5. The nature of sputum in bronchitis | E. Mucous |
| 6. Rn of sputum in bronchitis | F. Muco-purulent |

Answer: 1-A; 2-D; 3-C; 4-D; 5-D; 6-B; 2-D; 4-C; 6-A; 1-A; 5-E.

5. Find the right answer

- | | |
|------------------|---|
| 1. Creatorrhea | A. The appearance of muscle fibers in the feces |
| 2. Steatorrhea | B. Increased fat content in feces |
| 3. Kitarinorrhea | C. Increased fiber content in feces |

Answer: 1-A; 3-A; 2-B; 3-B; 1-C; 3-C.

"Clinical research (general principles of parasitic diseases, nematodes, cestodes, trematodes; types of protozoa inhabiting the human gastrointestinal tract; types of malaria parasitic parasites in humans)".

Option number 1

1. Any individual of the malaria parasite has:

- A. Cytoplasm and nucleus
- B. Vacuole and cytoplasm
- C. Pigment and grit
- D. There is no correct answer.

E. Pseudopodia

2. Determination of the species of *Plasmodium malaria* is necessary for:

A. Prescribing a treatment regimen

B. Carrying out anti-epidemic measures

C. Prediction of cure

D. Fatal prognosis

E. All of the above

3. In the duodenal content there can be vegetative forms of the flagellate genus:

A. *Trichomonas*

B. *Lamblia*

C. Chylomastics

D. All of the above

E. There is no correct answer.

4. In the mucous-bloody discharge of a patient with amebiasis, you can find:

A. Cysts

B. Disputes

C. Hematophages

D. Polyphages

E. There is no correct answer.

5. Blood from a patient for testing for malaria should be taken:

A. During chills

B. During the heat

C. During sweating

D. In the interictal period

E. At any time, regardless of the attack

Option number 2

1.) IN THE DUODENAL CONTENT MAY BE VEGETATIVE FORMS OF CIGGIUM GENUS:

A. *Trichomonas*

B. Chylomastics

C. *Lamblia*

D. All of the above

E. There is no correct answer.

2.) WHEN EXAMINING THE DUODENAL CONTENT, EGGS OF THE FOLLOWING HELMINTS MAY BE DETECTED:

- A. Opistorha
- B. Dicrocoelia
- C. Klonorha
- D. All of the above
- E. Fasciola

3.) A ROUND-SHAPED COLORLESS, TRANSPARENT EGGS WITH A TWO-LONG CASING ARE DETECTED IN A CHILD IN THE FEAL. BETWEEN OUTER AND INNER SHELL, WIGGING FILAMENTS SEE. THERE ARE 3 PAIRS OF HOOKS LOCATED IN THE CENTER. EGGS DETECTED ARE RELATED TO:

- A. Ascaride
- B. Dwarf tapeworm
- C. Vlasoglav
- D. Bull tapeworm
- E. All of the above is true.

4.) A ROUND-SHAPED COLORLESS, TRANSPARENT EGGS WITH A TWO-LONG CASING ARE DETECTED IN A CHILD IN THE FEAL. BETWEEN OUTER AND INNER SHELL, WIGGING FILAMENTS SEE. THERE ARE 3 PAIRS OF HOOKS LOCATED IN THE CENTER. EGGS DETECTED ARE RELATED TO:

- A. Ascaride
- B. Vlasoglav
- C. Bovine tapeworm
- D. Dwarf tapeworm

5.) THE PATIENT CONSIDERED A DOCTOR WITH COMPLAINTS ABOUT THE PERMANENT LEAVING OF THE MEMBERS, WHICH CREEP FROM THE INTESTINAL IN A FEW PIECES AT ANY TIME OF THE DAY AND NIGHT, REGARDLESS OF THE ACT OF DEFECTION. YOU CAN THINK ABOUT:

- A. Diphyllbothriasis
- B. Teniarinhose
- C. Tenioze
- D. All of the above is true
- E. Hymenolepiasis

Option number 3

Add definitions:

Cestodosis -

Diphyllobothriasis -

Nematodes -

Nematodes -

Ascariasis -

Trichocephalosis -

Enterobiasis -

Digenetic flukes, or trematodes (Latin Digenea) -

Option number 4

Add definitions:

Plasmodiumvivax _____

Plasmodiummalariae - _____

Plasmodiumfaicparum _____

Plasmodiumovale - _____

Balantidiasis - _____

Giardiasis (giardiasis) - _____

Current test control on topic No. 4

"Biochemical research methods (protein metabolism, carbohydrate metabolism, enzymes) ".

Option number 1

1. The main symptom of type 1 diabetes mellitus is:

A. Absence of hypoglycemic effect on insulin administration

B. Obesity

B. Autoimmune destruction of the insular apparatus

D. Systemic angiopathies

E. Impaired interaction of insulin with cell receptors

2. The main symptom of type 2 diabetes mellitus is:

A. Disruption of the interaction of insulin with cells of insulin-dependent tissues

B. Ketoacidosis

C. Obesity

D. Damage to beta cells of the islets of the pancreas

E. Decrease in blood insulin levels

3. For diagnostic purposes, enzyme activity is determined in:

A. Blood serum

B. Liquore

C. Leucoconcentrates

D. Biopsy

E. All of the above is true.

4. Upon delivery of blood for research, the activity of enzymes may change as a result of:

A. Activation of plasma proteolytic systems

B. Destruction of the quaternary structure of enzymes

C. Changes in blood pH

D. Partial hemolysis of erythrocytes

E. All of the above is true

5. The source of analytical errors in determining the activity of enzymes can be:

A. Concentration of the substrate not saturating the enzyme

B. Changing the pH of the incubation mixture

C. Temperature instability during incubation

D. Use of reagents with an expired shelf life

E. All of the above

Option number 2

1). In blood serum, unlike plasma, there is no:

A. Fibrinogen

B. Albumin

C. Complement

D. Kallikrein

E. Antithrombin

2.) Creatinine is:

A. Osmotic diuretic

B. Regulator of the activity of the central nervous system

C. The end product of creatine metabolism

D. Catalyst for intermediate reactions

E. All of the above is true.

3.) Total iron binding capacity is a measure of serum concentration:

A. Iron

B. Transferrin

C. Ceruloplasmin

D. All of the above is true

4.) THE CAUSE OF INCREASED TOTAL PROTEIN IN WHEY CANNOT BE:

A. Multiple myeloma

B. Overhydration

C. Acute infection

D. Paraproteinemic hemoblastosis

E. Dehydration

5.) DOES NOT PARTICIPATE IN CARBOHYDRATE SPLITTING:

A. Alpha - amylase

B. Gamma - amylase

C. Chymotrypsin

D. Lactaza

E. Maltaza

"Biochemical research methods (lipid metabolism, pigment metabolism)".

Option number 1

1. A moderate increase in the content of unconjugated bilirubin in the blood occurs when:

A. increased destruction of erythrocytes;

B. competitive displacement of unconjugated bilirubin from the bond with albumin;

C. violation of the capture of unconjugated bilirubin from the blood by hepatocytes;

D. insufficient activity of uridine diphosphate-glucuronyltransferase of hepatocytes;

E. All of the above is true.

2. Norms of bilirubin in the blood of a healthy person:

A. 6.5 - 8.5 $\mu\text{mol} / \text{l}$

B. 1.7 - 21 $\mu\text{mol} / \text{l}$

C. 10.0 - 18.0 $\mu\text{mol} / \text{l}$

D. 9.5 - 25.5 $\mu\text{mol} / \text{l}$

E. 8.5 - 20.5 $\mu\text{mol} / \text{l}$

3. What class of lipoproteins indicates a high risk of atherosclerosis:

A. HDL

B. LDL

C. VLDL

D. Chylomicrons

4. An increase in the concentration of triglycerides, and which class of lipoproteins indicates the risk of atherosclerosis

A. HDL

B. LDL

C. VLDL

D. Chylomicrons

5. The urine of a healthy person contains:

A. Biliverdin

B. Stercobilinogen

C. mesobilirubin

D. Bilirubin

E. All of the above

Option number **2**

1. An increase in the content of conjugated bilirubin in the blood is characteristic:

A. acute viral hepatitis;

B. medicinal hepatitis;

C. toxic hepatitis;

D. liver metastases;

E. all of the above is true

2. The residual nitrogen fraction does not include:

A. Ammonia

B. Albumin

C. Amino acids, indican

D. Uchevina

3. Conjugated bilirubin in normal blood is up to:

A. 5%

B. 25%

C. 50%

D. 75%

E. 100%

4. THE METHODS OF URGENT LABORATORY DIAGNOSTICS SHOULD BE RELATED TO THE DEFINITION:

A. Acid phosphatase activities

B. Total cholesterol

C. Protein fractions

D. Bilirubin in newborns

E. Tumor markers

5.) IN THE COMPOSITION OF BLOOD PLASMA GAMMA GLOBULINS IS MOST REPRESENTED

A. IgM B. IgG C. IgA D. IgE

Option number **3**

Add definitions:

Enzymes (enzymes) - _____

ALT - _____

AST - _____

Amylase- _____

Acid phosphatase - _____

Alkaline phosphatase - _____

Carbohydrates -

Bilirubin - _____

Lipids - _____

"Water and mineral metabolism. Methods for the study of acid-base balance."

Option number 1

1. The constancy of the acid-base state is predominantly maintained by:

- A. Synovial fluid
- B. Lymphatic fluid
- C. Kidneys
- D. Bone tissue
- E. Myocardium

2. Acidosis is characterized by:

- A. Increase in blood pH;
- B. An increase in the concentration of OH⁻ in the blood
- C. Decrease in blood pH
- D. Decrease in H⁺ concentration
- E. Decreased blood lactate

3. Alkalosis is characterized by:

- A. Decrease in blood pH;
- B. A decrease in the concentration of OH⁻ in the blood
- C. Increase in blood pH of blood
- D. Decrease in H⁺ concentration
- E. Increased blood lactate

4. The pH of human arterial blood is normal:

- A. 0.0-1.0
- B. 6.7-7.7
- C. 7.0-7.35
- D. 7.35-7.45
- E. 7.0-10.0

5. Metabolic acidosis includes:

- A. Ketoacidosis
- B. Lactic acidosis
- C. Renal acidosis
- D. Enteroacidosis
- E. All of the above is true.

Option number 2

1.) Respiratory alkalosis develops when

- A. Hyperventilation of the lungs
- B. Profuse vomiting
- C. Tumors of the trachea
- D. Infusion of soda solutions
- E. Lung hypoventilation

2.) The pH of human arterial blood is normal (units):

- A. 0.0-1.0
- B. 6.7-7.7
- C. 7.0-7.35

D. 7.35-7.45

E. 7.0-10.0

3.) pH means:

A. Concentration of hydrogen ions

B. Symbol representing the negative decimal logarithm of the molar concentration of hydrogen ions

C. Concentration of hydroxyl groups

D. The ratio of the concentration of H^+ to the concentration of hydroxyl groups

E. Hydrogen ion voltage

4.) The role of the bicarbonate buffer system is:

A. Replacing strong acids with weak ones

B. The formation of organic acids in the body

C. Source of phosphorus ions

D. Excretion of phosphates from the body

E. Maintaining osmotic pressure

5.) The constancy of the acid-base state is predominantly maintained by:

A. Synovial fluid

B. Lymphatic fluid

C. Kidneys

D. Bone tissue

E. Myocardium

Current test control on topic No. 5.

“Coagulology. Hemostasis system. The main links of the hemostasis system. Internal and external activation mechanism of the hemostatic system. The norm and pathology of the hemostasis system. Hemophilia. Thrombocytopathy. Thrombocytopenia. K-vitamin deficiency. The concept of thrombophilia and hemorrhage. ”

Option number 1

1. The hemostasis system includes:

A. Factors of fibrinolysis

B. Plasma factors

C. Anticoagulants

D. Platelets

E. All of the above

2. The inducer of platelet aggregation is:

A. Aspirin

- B. AMF
- C. ADF
- D. Uchevina
- E. Prothrombin

3. Platelet-vascular hemostasis belongs to the function:

- A. Proteolysis
- B. Adhesive-aggregation
- C. Hydrolysis
- D. Lysis of euglobulins
- E. Fibrinolysis

4. Prothrombinase formation along the internal pathway should be controlled:

- A. Platelet aggregation
- B. Determination of fibrinogen
- C. Activated partial thromboplastin time
- D. Prothrombin time
- E. bleeding time

5. The activator of the Hageman factor is not:

- A. Glass
- B. Kaolin
- C. Silicone
- D. Coarse collagen
- E. Leather

Option number 2

1.) PROTHROMBINASE EDUCATION ON THE INTERNAL WAY SHOULD BE CONTROLLED:

- A. Platelet aggregation
- B. Prothrombin time
- C. Determination of fibrinogen
- D. Time of bleeding
- E. Activated partial thromboplastin time

2.) THE ACTIVITY OF THE FIBRINOLYTIC SYSTEM SHOULD BE CONTROLLED:

- A. Antithrombin III
- B. Lysis of euglobulins
- C. Thrombin time
- D. Aggregation of platelets
- E. Prothrombin time

3.) THE ACTIVATOR OF THE HAGEMAN FACTOR IS NOT:

- A. Glass
- B. Coarse collagen
- C. Kaolin

D. Leather

E. Silicone

4.) CONTROL OF ANTICOAGULANTS OF INDIRECT ACTION CAN BE CARRIED OUT BY THE DEFINITION:

A. Prothrombin according to Quick (% of the norm)

B. Prothrombin time

C. International normalized relationship

D. Prothrombin index

E. All of the above is true.

5.) THE CAUSE OF ICE - SYNDROME MAY BE THE FOLLOWING EXOGENIC FACTOR:

A. Bacteremia, viremia

B. Vascular prostheses

C. Transfusion fluids

D. All of the above is true

E. snake venom

Option number **3**

Add definitions:

1. System of hemostasis -

2. Morphological components of the hemostasis system:

3. Functional components of the hemostasis system:

4. The formation of the primary platelet plug in case of damage to the vessel conditionally takes place in 3 stages _____

5. The blood clotting process can be divided into three phases: _____

Current test control on topic No. 6.

“Subject and tasks of immunology. The concept of the immune system and immunological reactivity. Central and peripheral organs of the immune system. Immunoglobulins (antibodies).

Immunological research methods in the CDL ”.

Option number 1

1. Central organs of the immune system:
 - A. Thymus, bone marrow
 - B. Liver
 - C. Lymph nodes
 - D. Spleen
 - E. Peyer's patches of the ileum
2. The peripheral organs of the immune system include:
 - A. Tonsils
 - B. Lymph nodes
 - C. Spleen
 - D. Peyer's patches
 - E. All of the above is true.
3. Plasma cells come from:
 - A. B-lymphocytes
 - B. T-lymphocytes
 - C. Macrophagov
 - D. Fibroblasts
 - E. All of the listed cells
4. What kind of B-cell maturation occurs in the bone marrow?
 - A. Antigen-independent
 - B. Antigen-dependent
 - C. Maturation of B cells does not occur
 - D. In the bone marrow, antigen-independent and then antigen-dependent
 - E. There is no correct answer.
5. In the course of the immune response, cooperation takes place between:
 - A. Phagocytes, T- and B-lymphocytes
 - B. Macrophages and B-lymphocytes
 - C. Macrophages, thymocytes and B-lymphocytes
 - D. Macrophages and T-lymphocytes
 - E. T - and B-lymphocytes and plasma cells

Option number 2

- 1.) Central organs of the immune system:
 - A. Thymus, bone marrow
 - B. Liver
 - C. Lymph nodes

D. Spleen

E. Peyer's patches of the ileum

2.) BASIC FUNCTION OF THE CENTRAL BODIES OF THE IMMUNE

SYSTEMS:

A. Maturation and multiplication of immunocompetent progenitor cells

B. Antigen-independent formation of T- and B-systems of immunity

C. When interacting with the antigen, the death of immature lymphocytes as a result of apoptosis

D. All of the above

3.) THE PERIPHERAL ORGANS OF THE IMMUNE SYSTEM ARE RELATED TO:

A. Tonsils

B. Lymph nodes

C. Spleen

D. Peyer's patches

E. All of the above is true

4.) HUMAN T-LYMPHOCYTES COME FROM:

A. Unipotent precursor of bone marrow T-lymphocytes with subsequent maturation in the thymus

B. Colony-forming granulocyte - macrophage unit of the spleen.

C. Lymphocyte lymph

D. Spleen cells

5). T-lymphocytes - helpers:

A. CD3-CD (16 + CD56) +

B. CD3 + CD8 +

C. CD3 + CD (16 + CD56) +

D. CD3 + CD4 +

OPTION NUMBER 3

Add definitions:

1. Organs of the immune system (central): _____

2. Organs of the immune system (peripheral):

3. Cells of the immune system:

4. Early inflammatory response - non-specific -

5. Specific immune response usually occurs

"Immunological research methods in CDL. Antigen-antibody reaction"

OPTION NUMBER 1

1. The most common cause of hemolytic disease of the newborn is antibodies to:

A. Antigens of the ABO system

B. Rhesus antigens

C. Antigenam M, Duff

D. All of the above is true

E. All of the above is not correct

2. The definition of group affiliation is based on the reaction:

A. Agglutination

B. Precipitation

C. Immunodiffusion

D. Aggregations

E. All of the above is true.

3. To determine group affiliation using the cross method, you need to use:

A. Serum

B. Suspension of erythrocytes

C. Serum and erythrocyte suspension

D. Blood without stabilizer

E. All of the above is true.

4. Main markers of T-lymphocytes:

A. CD3

- B. CD19
- C. CD25
- D. CD38
- E. All of the above is true.

5. Main markers of B-lymphocytes:

- A. CD3
- B. CD4
- C. CD19
- D. CD38
- E. All of the above is true.

OPTION NUMBER 2

ADD DEFINITIONS:

1. ANTIGENS OF THE ABO SYSTEM (ERYTHROCYTE ANTIGENS A AND B) ARE LOCATED ...

2. THE ANTIGENS OF THE RH SYSTEM ARE LOCATED ...

3. THE TERM "BLOOD GROUP" CHARACTERIZES

4. THE TWO MOST IMPORTANT CLASSIFICATIONS OF HUMAN BLOOD GROUP ARE

5. HEMOLYTIC DISEASE OF THE NEWBORN -

"Methods of enzyme-linked immunosorbent assay (ELISA)".

Option number 1

1. Antibodies, IgM class:

- A. Show antibacterial properties
- B. Bind complement
- C. Participate in the primary immune response
- D. All of the above is true

E. There is no correct answer.

2. *Antibodies, IgG class:*

- A. Bind complement
- B. Bind to phagocytic cells
- C. Penetrate the placenta
- D. All of the above is true

3. *Antibodies, IgA class:*

- A. Provide an immune response in the respiratory and digestive systems
- B. Possess antibacterial and antiviral properties
- C. Form dimeric molecules
- D. Complexes with a secretory fragment
- E. All of the above is true.

4. *Infection accompanied by the formation of T-cell immunodeficiency:*

- A. HIV infection
- B. Scarlatina
- C. Influenza
- D. Measles
- E. Koklush

5. *In what cases is it advisable to determine the chorionic gonadotropin (hCG)?*

- A. Tumors of the uterus
- B. Diagnosis of early pregnancy and fetal pathology
- C. Trophoblast tumors
- D. Testicular tumors
- E. All of the above is true.

Option number **2**

Determination of AT to TPO in serum is used ...

Increased TSH ...

Decrease in T4 St. ...

Male sex hormones are ...

Female sex hormones are _____

Current test control on topic No. 7.

“General data on the structure and functions of organs and tissues in the norm. Cytological studies ”.

Option number 1

1. Cancer develops from:
 - A. Connective tissue
 - B. Muscle tissue
 - C. Epithelial tissue
 - D. Nerve tissue
 - E. Mesenchymal tissue
2. For malignant tumors, the most characteristic is:
 - A. Slow growth
 - B. Expansive growth
 - C. Infiltrative growth
 - D. None of the following factors
 - E. All of the above is typical
3. The following morphological features should be attributed to cell polymorphism:
 - A. Variety of cell shapes
 - B. Variety of cell sizes
 - C. Difference in the degree of maturation of individual cells
 - D. None of the listed signs
 - E. All listed signs
4. In the bladder, the most common:
 - A. Transitional cell tumors
 - B. Connective tissue tumors
 - C. Squamous cell tumors
 - D. Vascular tumors
 - E. All of the above is true.
5. The characteristic features of malignant tumor cells are:
 - A. Impaired differentiation
 - B. Polymorphism
 - C. Anisochromia
 - D. All of the listed signs
 - E. None of the listed signs

Option number 2

Add your sentence:

Cancer is

developing ... _____

Cytology is ... _____

For malignant tumors, the most typical ...

The components of the cytoplasm are ... _____

Cytological examination is used ... _____

“Methods of bacteriological research. The principle of work when performing analysis in a bacteriological laboratory ”.

Option number 1

1. Identification of gonococci is based on the following features, except:

- A. Paired cocci
- B. Gram-negativeness
- C. Gram positivity
- D. Intracellular location
- E. Bean shape

2. The bacteriological method consists of:

- A. Agglutination
- B. Precipitation
- C. Immunodiffusion
- D. Isolation of a pure culture of the pathogen and identification
- E. All of the above is true.

3. Identification in bacteriological research is:

- A. Establishment of belonging to a particular systematic group (species, genus)
- B. Revealing gram-negativeness
- C. Intracellular location
- D. Identification of gram-positive
- E. All of the above is true.

4. What nutrient medium is used for sowing conditionally pathogenic flora:

- A. Wednesday Endo
- B. Tellurite environment
- C. Universal culture media
- D. There is no correct answer.
- E. All listed environments

5. What method is used to stain the colonies for the preparation of smears:

- A. According to Romanovsky
- B. Thick-drop staining

- C. By Gram
- D. Cytochemical methods
- E. All of the above methods

OPTION NUMBER 2

Add your sentences:

What method is used to isolate a pure culture, in case of severe contamination of pathological material

The enrichment medium is necessary for the bacteriological research method ...

At the second stage of the bacteriological method of research,

The third stage of the bacteriological method _____

Intraspecific identification of bacteria is _____

“Methods of molecular genetic research. Principle of operation when performing PCR analysis ”.

Option number 1

1. The advantage of the PCR method as a method for diagnosing infectious diseases:

- A. Direct determination of the presence of the pathogen
- B. High specificity and sensitivity
- C. Versatility of the procedure for identifying various pathogens
- D. High speed of obtaining the result of analysis in acute and latent infections
- E. All of the above is true

2. False positive PCR results are possible:

- A. For cross-contamination from sample to sample during processing of clinical samples or when pipetting a reaction mixture
- B. In case of contamination with amplification products, which accumulate in large quantities and are ideal for re-amplification
- C. In case of contamination with trace amounts of amplicons of dishes, automatic pipettes, equipment
- D. All of the above is true
- E. All of the above is incorrect

3. The blot hybridization method is used for:

- A. Identification of specific DNA fragments
- B. Identification of DNA fragments
- C. DNA amplification
- D. All of the above methods
- E. There is no correct answer.

4. The PCR method is:

- A. Method for the diagnosis of infectious diseases
- B. Method for detecting genetic diseases
- C. Method of pharmacogenetics
- D. There is no correct answer.
- E. All of the above is true.

5. Predisposition to obesity and diabetes:

- A. 20 polymorphisms
- B. 7 polymorphisms
- C. 8 polymorphisms
- D. 12 polymorphisms
- E. All of the above is true.

OPTION NUMBER 2

Add definitions:

Polymerase chain reaction (PCR) is _____

Amplification - _____

Pharmacogenetics _____

The DNA cloning method allows _____

Restriction enzymes are

ЛД-16 ИИ

**Federal State Budgetary Educational Institution of Higher Education
«North-Ossetia State Medical Academy»
of the Ministry of Healthcare of the Russian Federation**

Department of biological chemistry

APPROVED


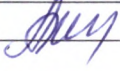

by the protocol of the meeting of the Central
coordinating educational and methodological
council on March 22, 2022. № 4

**Test questions
"Methods of modern express diagnostics"**

**the main professional educational program of higher education - specialty program in the
specialty 31.05.01 General Medicine, approved on March 30, 2022**

for _____ 6th year students _____
by specialty _____ 31.05.01 General Medicine _____

Developers:

Head of the department _____  A.E. Gurina
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Vladikavkaz 2022

Test questions

1. 1. Organization of laboratory services. The main regulatory orders of the clinical diagnostic service.
2. Quality control in the CDL. Basic formulas and concepts during internal laboratory quality control. Control materials used in quality control.
3. Basic and additional equipment of the clinical diagnostic laboratory.
4. The modern scheme of hematopoiesis. A brief description of the germs of hematopoiesis.
5. Morphology and functions of cells of the megakaryocytic lineage.
6. Morphology and function of cells of the myeloid lineage.
7. Morphology and function of erythroid germ cells.
8. Automated counting of blood cells. General blood analysis. The value of erythrocyte indices.
9. Quality control of hematological studies.
10. Leukemoid reactions of the blood (types and differences from leukemia).
11. Laboratory signs of iron deficiency anemia.
12. Laboratory signs of hemolytic anemia.
13. Hereditary and acquired hemolytic anemias.
14. Clinical and diagnostic value of the myelogram.
15. The main causes of leukocytosis.
16. The main causes of leukopenia.
17. Thrombocytopenia and thrombocytosis.
18. Morphological changes in erythrocytes in anemia. Counting reticulocytes.
19. Hemogram. Calculation of leukoformula and clinical significance.
20. Leukemoid reactions of the blood. Differential diagnosis with acute leukemia.
21. General clinical examination of urine. Determination of the physicochemical properties of urine.
22. Microscopic examination of organic and inorganic urine sediment.
23. Studies of urine according to Nechiporenko. The clinical significance of this study.
24. Study of effusion fluids. Determination of physical, chemical properties.
25. Differential diagnosis of transudates and exudates.
26. Microscopic examination of effusion fluids, clinical and diagnostic value of differentiation of cellular elements.
27. Research of duodenal contents. Determination of physical, chemical properties and microscopic examination.
28. Coprogram. Determination of physical, chemical properties and microscopic examination of feces.
29. General clinical study of cerebrospinal fluid. Cytosis concept.
30. Clinical and diagnostic value of microscopic examination of cerebrospinal fluid.
31. Rules for the preparation of preparations for the study of the morphology of parasites. Research for malaria plasmodium.
32. Bilirubin metabolism. Differential diagnosis of jaundice.
33. Lipidogram. Laboratory criteria for the development of atherosclerosis.
34. Clinical and diagnostic value of determination of urea and creatinine.
35. The main indicators of carbohydrate metabolism. Determination of glucose in clinical practice.

36. Markers of myocardial damage and their clinical significance.
37. Protein metabolism. Clinical and diagnostic value of determining indicators of protein metabolism.
38. Clinical and diagnostic value of the determination of aminotransferases. Methods of express diagnostics for the determination of aminotransferases in CDL.
39. Clinical and diagnostic value of the determination of lipids and lipoproteins. Methods for determination in CDL.
40. Clinical and diagnostic value of cholesterol. Methods for determination in CDL.
41. Determination of acid-base balance as the basis of emergency conditions.
42. The clinical significance of the determination of electrolytes.
43. Buffer systems of blood.
44. Laboratory methods for the study of acid-base balance
45. Metabolic acidosis and its clinical significance.
46. Metabolic alkalosis and its clinical significance.
47. Respiratory acidosis and its clinical significance.
48. Respiratory alkalosis and its clinical significance.
49. Hemostasis. General understanding of hemostatic balance.
50. Stages of the formation of a primary platelet plug in case of damage to the vascular wall.
51. Tests carried out in the CDL to assess the vascular and platelet components.
52. Components of the coagulation system. External and internal blood coagulation pathway.
53. Laboratory methods for assessing coagulation processes. Laboratory methods for evaluating fibrinolysis processes.
54. Clinical and diagnostic value of hypo- and hypercoagulation.
55. Control over treatment with direct and indirect anticoagulants.
56. Acquired platelet disorders (thrombocytopenia).
57. Plasma proteins of hemostasis.
58. Assessment of the fibrinolysis system.
59. Coagulogram and clinical significance.
60. Tests carried out in the CDL to assess plasma hemostasis. Express diagnostics of the definition of DIC syndrome.
61. Secondary complex disorders of hemostasis.
62. Inhibitors of the plasma coagulation system.
63. Activators of the plasma coagulation system.
64. Cellular immunity. The role of lymphocytes in the immune response.
65. Humoral immunity. Determination of immunoglobulins and their clinical significance.
66. The main functions of the immune system.
67. Methods of enzyme immunoassay.
68. ELISA studies of thyroid hormones.
69. ELISA research of hormones of the sexual sphere.
70. ELISA research of viral hepatitis.
71. Methods of latex - agglutination used in CDL.
72. Methods based on the principle of immunochromatographic analysis.
73. Cytogram of organs and tissues in health and disease. General understanding of the morphology of

cellular elements in cytological examination.

74. Methods of bacteriological research. Stages of bacteriological research.

75. Methods of molecular genetic research. The principle of operation when performing molecular genetic analysis.